REMARKS

Claims 1-11 are currently pending in the application. Claims 1 is amended. The amendments find support in the specification and are discussed in the relevant sections below. No new matter is added.

APPLICANT'S INVENTION

Applicant's invention is directed to an agent delivery system and a method for delivering a therapeutic agent to tissue. The delivery system includes a pellet containing a therapeutic agent, and a flexible, implantable body with a hollow interior. The implantable body is implanted in the tissue to be treated with the agent, and the pellet is placed within it. The implantable body is configured to hold the pellet after implantation. The implantable body can be a helical spring, where the individual coils hold the pellet in place, and are spaced so as to allow bodily fluids to pass into the implantable body and come in contact with the pellet. The coils can be smaller at one or both of the ends, to keep the pellet within the implantable body.

The invention can also include an implant delivery device, and a tube for delivering the pellet, where the tube engages the proximal end of the implantable body. The delivery device can also include mechanisms for alignment of the device, restraint of the pellet, and advancement of the pellet(s). The alignment tool can be configured to fit within the inner diameter of the coils of the implantable body, or it can be configured to fit outside the outer diameter. The agent delivery system can also include a multi-lumen delivery tube, with a lumen for implant delivery and a lumen for pellet delivery. The two tubes can be independently controllable. The system can also include an obturator for piercing the tissue.

In use, the system can be used to deliver to tissue a therapeutic agent in the form of a pellet. For example, the obturator, loaded with the implant, is advanced into the tissue to deliver the implant. The tube for delivering the pellet is loaded with the pellet, inserted into the proximal end of the implantable body, and the pellet is pushed out of the tube and into the interior of the implantable body, within the space defined by the coils. The delivery tube is then removed, leaving behind the implantable body with the therapeutic pellet caged within. The proximal end of the implantable body can be closed, *e.g.*, by crimping, so as to prevent escape of the pellet through the proximal end of the implantable body.

THE CITED ART

Hayman *et al.* (U.S. Pat. No. 6,192,271; "Hayman")

Hayman discloses a radiotherapy stent. It consists of collapsible mesh body, with one or more hollow sleeves running lengthwise along the body. Before implantation, the sleeves are loaded with radioactive material. The sleeves are hollow and cylindrical, and have at least one open end, through which the radioactive pellets are loaded (column 3, lines 51-53). After the sleeves are loaded with radioactive material, they are sealed, to prevent the escape of the radioactive material (column 3, lines 59-62). Alternatively, the radioactive material can be in the form of strings rather than pellets, for instance, a continuous string of tiny cylindrical bodies secured end to end, or a radioactive wire (column 4, lines 31-37). After the radioactive strings or wires are loaded into the sleeves, the ends of the sleeves are sealed (column 4, lines 54-56). There is no teaching or suggestion that the radioactive materials within the sleeves are exposed to bodily fluids, or that the sleeves are open in any way after implantation.

Peiler *et al.* (U.S. Pat. No. 6,036,666

Peiler discloses a medicated tampon for delivering medicaments to the vaginal area. Operation of the device is shown in Fig. 3, and is described in the text:

> As is indicated by the arrow 38, the wand 16 is moved so that the closed end 34 passes along the bore 22, ***thus moving the medicament 20 out of the bore 22, as is indicated by the arrow 40. At such time as the medicament 20 is completely expelled from the bore 22,*** the movement of the wand 16 with dosage measurement scale 51 in the direction shown by the arrow 38 is terminated, and the wand 16 with dosage measurement scale 51 then moved in the opposite direction to the movement shown by arrow 38, until the wand is completely withdrawn from the tampon body and is then further withdrawn from the vaginal cavity. ***Thus, upon expulsion of the medicament 20 from the tampon body 12*** with rounded front end 11 as above described, and the withdrawal of the wand 16 with dosage measurement scale 51 from the tampon body 12 with rounded front end 11 and the vaginal cavity, the medicament 20 is dissolved within the vaginal cavity as well as

> sealing the vaginal cavity to maintain the medicament 20 therewithin.

(column 7, lines 12-30, emphases added).

As described in the text, the medicament is expelled from the tampon, and is not retained within it.

Leone *et al.* (U.S. Pat. No. 5,891,108; "Leone")

Leone discloses an expandable tubular stent formed from hollow wire having multiple perfusion ports formed therein. When placed in position in a vessel, the proximal end of the stent remains connected to a liquid drug delivery system. Liquid drugs are injected through the delivery system into the tubular wire of the stent and exude through the perfusion ports to reach the surrounding vessel tissue.

Fagan *et al.* (U.S. Pat. No. 6,206,915; "Fagan")

Fagan discloses a drug storing and metering stent for placement within a vessel. The stent comprises a lumen within another lumen, with a space separating the two. A therapeutic drug, such as a biosorbable gel, is placed in the space between the two lumens (column 2, lines 29-34; column 5, lines 21-27).

Billeter *et al.* (U.S. Pat. No. 4,731,054; "Billeter")

Billeter discloses a medical repository probe in the form of a hollow tube, which is intended to be loaded with medicine carriers. The tube is made up along its length of separated segments and flexible joint zones. The tube has holes in it to allow the medicine to leach out of the medicine carriers and into the body of the patient. Billeter does not disclose leaving the device within the patient's body, rather, it is clearly indicated that the device is intended to be removed at a later date. The reference also states that the tube can act as a drainage tube, that is, it is in fluid communication with the outside of the patient's body.

Claim Rejections Under 35 U.S.C. § 102(e)

Claim 1 is rejected under 35 U.S.C. § 102(e) as being anticipated by Hayman. The office action states that Hayman discloses an agent delivery system having a pellet containing a therapeutic agent, a flexible, implantable body having a hollow interior configured to receive and retain the pellet within the interior after the body has been implanted within tissue.

Claim 1, as amended, recites a flexible implantable body containing a pellet containing therapeutic agent within its hollow interior, where the implantable body has at least one opening which is sized to permit bodily fluid to enter the interior.

Hayman does not disclose or suggest that bodily fluid can enter the interior chamber containing the therapeutic pellets. Hayman discloses a radiotherapy stent where radioactive pellets or wires are enclosed within hollow sleeves. Hayman states that these hollow sleeves are sealed "so as to prevent escape of the radioactive material from the assembly" (column 3, lines 61-62). There is no suggestion that the sleeves are open in any way, rather, radioactive rays pass through the walls of the hollow sleeves and into the tissue into which the stent has been implanted. Amended Claim 1 in comparison, requires that bodily fluid be allow to enter the interior of the device.

Claim 1, therefore, cannot be anticipated by Hayman, and applicants respectfully request that the rejection on this basis be reconsidered and withdrawn.

Claim 1 was also rejected as being anticipated by Peiler. The office action states that this reference also discloses an agent delivery system having a pellet containing a therapeutic agent, a flexible, implantable body having a hollow interior configured to receive and retain the pellet within the interior after the body has been implanted within tissue.

Applicants respectfully disagree with the office action's characterization of this reference. Peiler discloses a medicated tampon, which applicants respectfully submit is inapposite art. Furthermore, the device can only be used in 50 percent of the population.

More importantly, however, the Peiler device does not retain the medicated pellet within the interior of the device after implantation. The operation of the device is shown in Fig. 3, and described in the text at column 7, lines 12-30. This section clearly states that the medication is completely expelled from the interior of the tampon device. This reference therefore fails to

disclose a flexible implantable body configured to "retain the pellet within the interior after the body has been implanted within tissue."

Applicants, therefore, respectfully submit that this reference cannot anticipate claim 1, and request that the rejection on this basis be reconsidered and withdrawn.

Claim Rejections Under 35 U.S.C. § 103

Claims 2-4 were rejected under 35 U.S.C. § 103 as being unpatentable over Hayman in view of Leone, Fagan, Peiler and Billeter. The office action states that Hayman does not disclose a helical spring having individual coils which retain the pellet in position within the device, but appears to rely on Leone and Fagan to supply this.

In order to establish a *prima facie* case of obviousness, the combined prior art references must teach or suggest all the claim limitations and provide motivation for the combination. The Federal Circuit has stated that "[o]bviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching[,] suggestion or incentive supporting the combination" (*In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987)) and that "[i]t is impermissible . . . simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. . . . The references themselves must provide some teaching whereby the applicant's combination would have been obvious." (*In re Gorman*, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991)).

The office action states that Hayman does not disclose a helical spring having individual coils which retain the pellet in position within that device, but that "the structural and functional limitations above are conventional in view of the teachings of Leone, et al. and Fagan, et al."

However, the mere fact that references can be combined does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *Berghauser v. Dann, Comr. Pats.*, 204 U.S.P.Q. 393 (Dist. DC 1979); *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929 (Fed. Cir. 1984). Citing references which merely indicate that isolated elements and/or features recited in the claims are known is not a sufficient basis for concluding that the combination of claimed elements would have been obvious. *Ex parte Hiyamizu*, 10 U.S.P.Q.2d 1393 (Bd. Pat. App. & Inter. 1988).

Hayman discloses a sealed implant containing radioactive pellets, Leone discloses a coil containing a liquid drug, and Fagan discloses a stent that stores a drug in biosorbable gel form in a space between two nested lumens. There is no teaching or suggestion to be found within these references indicating that they can be combined to produce an implantable body comprising a helical spring having individual coils which define an inside diameter suitable for retaining a medicated pellet, yet are spaced at a distance which would allow bodily fluids to enter the interior device.

There is no teaching or suggestion that the device of Hayman can be made helical in shape and that the therapeutic agents can be placed in the open space between the coils. There is no suggestion or teaching to place the radioactive pellets of Hayman into the spaces between the coils of the Leone device. There is also no teaching or suggestion to make the device of Fagan helical in shape, and to put pellets into the space between the coils. Nor is there any teaching or suggestion in any of these references that the device of Leone can be used with a solid drug rather than a liquid, and that the drug can be placed within the space defined by the coils rather than inside the tube as it is taught by Leone. The disclosure of Peiler does not retain the medication pellet within the device at all, and there is no suggestion any where in the reference that it could do so. There is also no teaching or suggestion that the device of Billeter can be formed into a coil and that the pellet can be held within the space defined by the coils.

The references cited cannot render obvious applicants' claims. The Office Action points to no teaching or suggestion within any of the cited references that they can modified and combined to produce the subject matter of applicants' claims. Applicants respectfully request, therefore, that the rejection on this basis be reconsidered and withdrawn.

Applicants submit that all of the claims are now in condition for allowance, which action is requested. Please apply any charges or credits to Deposit Account No. 50-1721.

Respectfully submitted,

Joyce C. Hersh
Reg. No. 42,890
Attorney for Applicant
KIRKPATRICK & LOCKHART
NICHOLSON GRAHAM LLP
75 State Street
Boston, MA 02109-1808
Tel: 617-261-3100
Fax: 617-261-3175

Date: January 18, 2005